

CLAIMS

Claim 1. A consolidated thermoplastic elastomer having substantial elongation and substantially low compression set derived from the thermally elevated compression of polyvinylidene fluoride foam.

Claim 2. A consolidated thermoplastic elastomer as described by claim 1 wherein said polyvinylidene fluoride foam is compressed by a ratio of about 5:1 to about 7:1

Claim 3. A consolidated thermoplastic elastomer as described by claim 2 wherein said polyvinylidene fluoride foam is compressed in a thermal environment of about 300°F to about 350°F.

Claim 4. A consolidated thermoplastic elastomer as described by claim 3 wherein said compressed polyvinylidene fluoride foam is held in said heated environment for time period sufficient to displace substantially all air from said foam.

Claim 5. A consolidated thermoplastic elastomer as described by claim 3 wherein said compressed polyvinylidene fluoride foam is held in said heated environment for 5 to 10 minutes.

Claim 6. A consolidated thermoplastic elastomer as described by claim 4 wherein said compressed polyvinylidene fluoride foam is formed into an O-ring.

Claim 7. A consolidated thermoplastic elastomer as described by claim 4 wherein said compressed polyvinylidene fluoride foam is formed into a ring gasket.

Claim 8. A consolidated thermoplastic elastomer as described by claim 4 wherein said compressed polyvinylidene fluoride foam is formed into a diaphragm.

Claim 9. A consolidated thermoplastic elastomer as described by claim 8 wherein said compressed polyvinylidene fluoride foam is formed into a valve operating diaphragm.

Claim 10. A consolidated thermoplastic elastomer as described by claim 8 wherein said compressed polyvinylidene fluoride foam is formed into pump diaphragm.

Claim 11. A method of forming a consolidated PVDF elastomer product comprising the steps of:

- (a) forming a product blank profile from a PVDF foam;
- (b) placing said product blank in a mold between platens of a heated molding press;
- (c) volumetrically compressing said product blank between said platens by a ratio of 5:1 to 6:1 while heating said blank between 300°F and 350°F; and,
- (d) holding said compressed and heated product for a time sufficient to displace substantially all air from said PVDF foam.

Claim 12. A method as described by claim 11 wherein said product blank comprises a serially stacked plurality of PVDF foam sheets.

Claim 13. A method as described by claim 12 wherein said product is held in said compressed and heated state for 5 to 10 minutes.

Claim 14. A method of manufacturing a sealing element for fluid system joints comprising the steps of:

- (a) forming a blank profile of said sealing element from PVDF foam;
- (b) placing said blank between platens of a heated molding press;
- (c) compressing said blank profile by a ratio of between 5:1 and 7:1;
- (d) heating said compressed blank profile between 300°F and 350°F; and,
- (e) holding said blank profile in said compressed and heated state for a time period to displace substantially all air from said foam.

Claim 15. A method of manufacturing a sealing element as described by claim 14 wherein said sealing element blank profile is formed from a plurality of PVDF foam sheets.

Claim 16. A method of manufacturing a sealing element as described by claim 14 wherein said blank profile is held in said compressed and heated state for 5-10 minutes.

Claim 17. The article produced by the method of claim 14.

Claim 18. A pliable elastomer sealing element for sealing fluid joints formed from a consolidated PVDF foam blank having a Shore "A" Durometer of about 60 to 90.

Claim 19. A pliable elastomer sealing element as described by claim 18 wherein said sealing element is a ring gasket.

Claim 20. A pliable elastomer sealing element as described by claim 18 wherein said sealing element is an O-ring.

Claim 21. A pliable elastomer sealing element as described by claim 18
wherein said sealing element is a diaphragm.